Date .....

Expt. No. ..... Probable Questions for Examination Page No. ..... ①

*	Sensor & Transducer	Marks.
1.	Give brief classification of transducers?	5
2.	Explain the operation of strain gauge?	5
3.	Name any two elastic pressure sensors?	2
4.	Explain the process of temp. measurement by using thermocouple?	5
5.	Short notes on LVDT & working principle?	7
6.	What is a transducer?	2
7.	Explain about potentiometer transducer?	5
8.	What is a strain gauge?	2
9.	What are the advantages & disadvantages of capacitive transducer?	5
10.	Explain about piezoelectric transducer with its application?	7
11.	What are the different types of piezoelectric material?	2
12.	Name any two resistive transducers?	2
13.	Explain the working of platinum characteristics of thermistor?	5
14.	Give the resistance - temperature characteristics of thermistor?	7
15.	Name the variable sensed & the parameter affected in LVDT?	2
16.	Explain the principle of capacitive transducer with change in overlapping area?	5
17.	Name any two pressure sensors?	2
18.	Explain with neat sketches, the operation of capacitive transducer using change in distance between the plates?	7
19.	Name any two active transducers?	2
20.	What is a thermocouple?	2
21.	Define the term sensitivity & null voltage of LVDT?	2
22.	Write two applications of electronic transducer?	2
23.	Explain the working of Hall effect transducer with its application?	7
24.	What is Hall effect transducer?	2

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Measuring Instrument

1. What is deflecting torque? [2]
2. What is controlling torque? [2]
3. What is damping torque? [2]
4. Define accuracy. [2]
5. Define resolution. [2]
6. Define sensitivity. [2]
7. Explain Deflecting, controlling & damping torque in indicating type instrument. [5]
8. What do you understand by calibration of measuring instrument. [2]
9. Define tolerance. [2]
10. Explain damping arrangement in indicating instruments? [5]
11. Why mirrors are provided in measuring instruments? [2]
12. What is the difference between indicating type & integrating type instrument? [2]
13. What are the various methods of obtaining damping torque? [6]
14. What do you mean by calibration of measuring instrument? [2]
15. Give one example of integrating type measuring instrument? [2]

* Analog Ammeters & voltmeters:

1. An ammeter having a range of 0-25A having an internal resistance of 0.1Ω is to be used to measure upto a range of 0-120A. Calculate the value of shunt resistance required with connecting diagram. 15
2. Explain PMMC instrument with neat sketch. 17
3. Explain the working principle of Rectifier type instrument? 15
4. Explain the two type of controlling arrangments in indicating type of instrument?
5. A milliammeter of range 0-50mA is required to measure a load current of 6A. The milliammeter has an internal resistance of 0.35 Calculate the value of of shunt resistance necessary for it.
6. You have an ammeter of internal resistance 100Ω, which can measure the maximum current of 30A. How can you extend the range to measure a maximum current of 100A. Show the circuit with ammeter.
7. Explain the working principle of attraction type M.I. instrument?
8. Why voltmeter is connected in parallel & ammeter is connected in series with the load?
9. What is a rectifier type instrument? 12
10. State with example how can you extend the range of voltmeter & ammeters? 15
11. The torque of an ammeter varies as the square of current through it, if a current of 10A produces a deflection of 90°, what will be the deflection angle for 5A, when the instrument is (i) spring control, (ii) Gravity control. 16
12. If the moving coil consists of 100 turns wound on a rectangular former of length 3.1 cm & width 2.2 cm and flux density in the air gap is 0.6 wb/m². Calculate the torque acting on it? 18

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13. Why an ammeter is of very low resistance? (2)

14. An ammeter having a range of 0–20A having an internal resistance of 0.08Ω is to be used to measure a range of 0–200A. Calculate the value of shunt resistance required with the connection diagram?

15. By which type of instruments only D.C. quantities can be measured?

16. Electrical ~~energy~~ energy is converted to what form in an electrical measuring instrument?

17. State the purpose of using multipliers in measuring instrument?

18. State advantages & disadvantages of M.I type instrument over PMMC type instrument.

19. A moving coil instrument has a resistance of 20Ω & gives full-scale deflection, when carrying a current of 50mA. Show how it can be adopted to measure (i) voltage upto 750 volt (ii) current upto 100A.

* Wattmeter & measurement of Power

1. State the errors in dynamometer type wattmeter and methods of their correction. 15
2. Explain the working principle of dynamometer type wattmeter? 17
3. What is a multiplying factor in a wattmeter? 12
4. Explain error in wattmeter due to different type of connections. 15
5. Explain the working principle of induction type wattmeter? 17
6. Differentiate between LPF & UPF wattmeters.

* Energy meter & measurement of Energy

1. What is the speed error in energymeter & how it will be compensated? 15
2. Explain single phase induction type energy meter with diagram? 18
3. What is creeping error in energy meter & how it will be reduced? 15
4. Which type of instrument suffers from creeping error?
5. A single phase kWh meter makes 500 revolutions per kWh. It is found in testing as making 50 revolutions in 60sec at 5 kw full load. Find out the percentage error? 16

* Oscilloscope

1. Name the parameters that can be measured using CRO? 12
2. Explain CRO & draw block diagram of CRO. 17
3. Explain working principle of CRO by help of neat block diagram? 17
4. Draw the block diagram of CRO & explain each and every block? 17
5. Explain the measurement of voltage & frequency using CRO. 15
6. What is time base signal in CRO? 12
7. What do you mean by lissagious figure? 12
8. Explain the method of measurement of AC voltage, current using CRO?
9. What do you mean by focusing an electron beam in a CRO? 12

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* Measurement of Resistance, Inductance & Capacitance.

1. For what measurement schering bridge is used? (2)
2. State two applications of megger? (2)
3. State one advantage of digital multimeter over analog multimeter? (2)
4. With a neat diagram explain the measurement of medium resistance by wheatstone bridge method? (6)
5. State & explain with circuit diagram in brief the principle of unknown resistance using megger? (6)
6. Explain the method of measurement of inductance by maxwell's bridge method? (8)
7. Short notes on
   (i) Digital voltmeter.
   (ii) measurement of capacitance by schering bridge method. (2)
8. classify low, medium & high resistance?
9. Explain measurement of high resistance by loss of charge method. (7)
10. What is the function of multimeter? (2)
11. Explain the working of earth tester by neat diagram?

* Measurement of speed, frequency & power factor.

1. Define resolutions? (2)
2. Explain mechanical resonance type frequency meter? (5)
3. Explain dynamometer type single phase power factor meter? (7)
4. Explain the principle of operation of electrical resonance type frequency meter? (7)
5. What is the use of tachometer? (2)
6. Explain the working principle of tachometer? (7)